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INTERNATIONAL PRELIMINARY EXAMINATION REPORT



(PCT Article 36 and Rule 70)

Rec'd PCT/PTO 09 DEC 2004

Applicant's or agent's file reference WO 21.1017	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 03/50221	International filing date (day/month/year) 11.06.2003	Priority date (day/month/year) 13.06.2002
International Patent Classification (IPC) or both national classification and IPC G01F1/58		
Applicant SERVICES PETROLIERS SCHLUMBERGER		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of 1 sheets.

3. This report contains indications relating to the following items:
- I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 07.01.2004	Date of completion of this report 12.07.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Dantine, P Telephone No. +31 70 340-3396 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP 03/50221

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:

Description, Pages

1-8 as originally filed

Claims, Numbers

1-5 filed with telefax on 14.05.2004

Drawings, Sheets

1/2-2/2 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP 03/50221

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-5
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-5
Industrial applicability (IA)	Yes: Claims	1-5
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following document/s/:

D1: WO 02 36936 A
D2: US-A-5 388 455
D3: US-A-6 119 781
D4: US-A-5 521 592

1) The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 does not involve an inventive step in the sense of Article 33(3) PCT.

1.1) The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and discloses (the references in parentheses applying to this document):
(Fig. 1; Page 7 Line 17 - 27; Page 8 Line 15 - 23)

A method of controlling operation of an electric submersible pump (130,135) in a hydrocarbon well (105), including determining the flow rate of the produced fluids with a flow-meter (183C), whereby the pump is provided with electrical power with an electric supply source (140) positioned at the surface and capable of delivering a power required for an electrical submersible pump and where the flow-meter is supplied with electrical power from the electrical supply source (140).

1.2) The subject-matter of claim 1 therefore differs from this known method in that: the flow-meter comprises an electromagnetic flow-meter determining the velocity of the produced fluids

1.3) The problem to be solved by the present invention may therefore be regarded as provide a more precise and non-intrusive flow-meter (description page 2 line 28 - page 3 line 6).

1.4) The solution proposed in claim 1 of the present application cannot be considered

as involving an inventive step (Article 33(3) PCT) for the following reasons:

D2 discloses an electromagnetic flowmeter determining a velocity of fluids in a borehole (see column 3 line 42 - column 4 line 69). Confronted with the problem as stated in point 1.3, the man skilled in the art would consult a specialist in flow-meters. It would be obvious for him to point out to an electromagnetic flowmeter as it is a well-known device in the field showing a greater precision in measurements and being non intrusive. Furthermore it is already been used in boreholes as seen in D2 for a similar problem. It is considered therefore as an obvious solution to the man skilled in the art and therefore the subject-matter of claim 1 does not involve an inventive step in the sense of Article 33(3) PCT.

1.5) Note that a range of power and current for the power source for an ESP is the choice of the man skilled in the art and cannot be a differentiating feature. The specified range in claim 1 is usual as can be seen in D3 which discloses a 200 kW electric motor and a nominal current of 77 A.

2) Dependent claims 2 - 5 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step for the following reasons:

Claim 2: D1 discloses a pump carried on the bottom of a production tubing.

Claim 3: D1 discloses the flow meter carried on the surface tubing.

Claim 4: D4 discloses connection in series of a pump motor and sensors.

Claim 5: D4 discloses inductive coupling with currents of different frequencies.